

WHAT IS CLAIMED IS:

1. A sustained release, polymer-based, water insoluble bead, comprising a polymeric matrix containing a plurality of emulsion droplets, said droplets being formed from at least one surface active molecule, at least one volatile hydrophobic component and water, wherein said volatile component is released from said water insoluble bead in atmospheric air.

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AI 2. A sustained release, polymer-based, water insoluble bead, according to claim 1 wherein said polymeric matrix comprises at least one polymer selected from the group consisting of a protein, a polysaccharide and a synthetic polymer.

3. A sustained release, polymer-based, water insoluble bead, according to claim 2 wherein said protein is selected from the group consisting of gelatin, albumin, casein and Lactoglobulin.

4. A sustained release, polymer-based, water insoluble bead, according to claim 2, wherein said polysaccharide is selected from the group consisting of sodium alginate, chitin, carraggenan, guar gum, locus bean gum, chitosan, pectin carboxy methyl cellulose.

5. A sustained release, polymer-based, water insoluble bead, according to claim 1, wherein said surface active molecule is selected from the group consisting of a protein, a monomeric surfactant and a polymeric surfactant.

6. A sustained release, polymer-based, water insoluble bead, according to claim 1, wherein said surface active molecule is selected from the group consisting of ethoxylated sorbitan ester, alkyl ether, a block copolymer and gelatin.

7. A sustained release, polymer-based, water insoluble bead, according to claim 1, wherein said bead is of a size between 0.5 micron and 1 mm.

8. A sustained release, polymer-based, water insoluble bead, according to claim 1, wherein said bead is of a size between 5 and 80 microns.

9. A sustained-release polysaccharide-protein water insoluble bead, according to claim 1, comprising an emulsion of at least one protein and at least one volatile hydrophobic component contained therein, wherein said volatile component is released from said water insoluble bead in atmospheric air.

10. A sustained-release polymer-based, water insoluble bead, according to claim 1, wherein said volatile component is a bioactive material.

11. A sustained-release polymer-based bead according to claim 1, wherein said volatile component is pheromone.

12. A sustained-release polymer-based bead according to claim 11, wherein said pheromone is selected from the group consisting of grandlure, muscalure, gossyplure and disparlure.

13. A sustained-release polymer-based bead according to claim 1, wherein said volatile component is an essential oil.

14. A sustained-release polymer-based bead according to claim 1, wherein said volatile component is a pesticide.

15. A sustained-release polymer-based bead according to claim 1, wherein said volatile component is an attractant.

16. A sustained-release polymer-based bead according to claim 15, wherein said attractant is selected from the group consisting of eugenol, benzyl alcohol, leaf alcohols, aldehydes and acetates.

17. A sustained-release polymer-based bead according to claim 1, wherein said volatile component is an attractant inhibitor.

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18. A sustained-release polymer-based bead according to claim 17, wherein said attractant inhibitor is selected from the group consisting of (Z)-9-tetradecenyl formate and (E,E)-10,12-hexadecadienol.

19. A sustained-release polymer-based bead according to claim 1, wherein said volatile component is present in an amount of up to 50% wt./wt.

20. A sustained-release polymer-based bead according to claim 1, wherein said volatile component is present in an amount of up to 20% wt./wt.

21. A sustained-release polymer-based bead according to claim 1, wherein said protein is a gelatin.

22. A sustained-release polymer-based bead according to claim 21, wherein said gelatin is a type B gelatin.

23. A sustained-release polymer-based bead according to claim 1, wherein said volatile component is Eugenol.

24. A sustained-release polymer-based bead according to claim 1, further comprising tannic acid for effecting a slower release rate.

25. A process for preparing sustained-release polymer-based water insoluble beads for release of a volatile hydrophobic component therefrom in atmospheric air, comprising:

a) preparing an oil/water emulsion by homogenizing a volatile hydrophobic component in water, using at least one surface active molecule;

b) mixing said emulsion with at least one water-soluble polymer and optionally rehomogenizing the mixture; and

c) adding the emulsion prepared in step (b) in a dropwise manner into a gellant solution to form said water insoluble beads.

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26. A process according to claim 25, further comprising the step of chemically cross-linking polymers present in said composition.
27. A process according to claim 25, further comprising the step of drying said beads.
28. A process according to claim 25, wherein said gellant solution is selected from the group consisting of an electrolyte solution, a multivalent ion solution, a lower pH solution and a high pH solution.
29. A process according to claim 25, wherein said volatile component is a bioactive material.
30. A process according to claim 25, wherein said volatile component is pheromone.
31. A process according to claim 30, wherein said pheromone is selected from the group consisting of grandlure, muscalure, gossyplure and disparlure.
32. A process according to claim 25, wherein said volatile component is an essential oil.
33. A process according to claim 25, wherein said volatile component is a pesticide.
34. A process according to claim 25, wherein said volatile component is an attractant.
35. A process according to claim 34, wherein said attractant is selected from the group consisting of eugenol, benzyl alcohol, leaf alcohols, aldehydes and acetates.
36. A process according to claim 25, wherein said volatile component is an attractant inhibitor.

37. A process according to claim 36, wherein said attractant inhibitor is selected from the group consisting of (Z)-9-tetradecenyl formate and (E,E)-10,12-hexadecadienol.
38. A process according to claim 25, wherein said volatile component is present in an amount of up to 50% wt./wt.
39. A process according to claim 25, wherein said volatile component is present in an amount of up to 20% wt./wt.
40. A process according to claim 25, wherein said surface active molecule is a gelatin.
41. A process according to claim 40, wherein said gelatin is a type B gelatin.
42. A process according to claim 25, wherein said gellant is an aqueous metal salt solution.
43. A process according to claim 42, wherein said aqueous metal salt solution comprises a divalent, trivalent or quatra-valent metal salt.
44. A process according to claim 42, wherein said metal salt solution comprises chlorides and acetates of calcium, barium, copper and tin.
45. A process according to claim 25, wherein the emulsion of step (b) is sprayed into said gellant to form micron-sized beads.
46. A process according to claim 25, wherein said polymer is a polysaccharide.
47. A process according to claim 46, wherein said polysaccharid is alginate.

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- 48 A process according to claim 47, wherein said alginat is a water-soluble salt of alginic acid.
- 49 A process according to claim 47, wherein said alginate is a water-soluble salt of organic bases.
- 50 A process according to claim 47, wherein said alginate is selected from the group consisting of sodium, potassium, magnesium, ammonium alginate and amines.
- 51 A process according to claim 47, wherein said alginate is present in an amount of about between 0.1 and 5% wt./wt.
- 52 A process according to claim 47, wherein said alginate is present in an amount of about between 1 and 1.5% wt./wt.
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